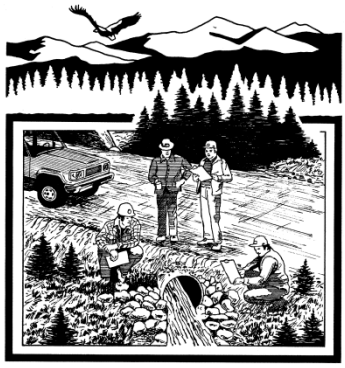


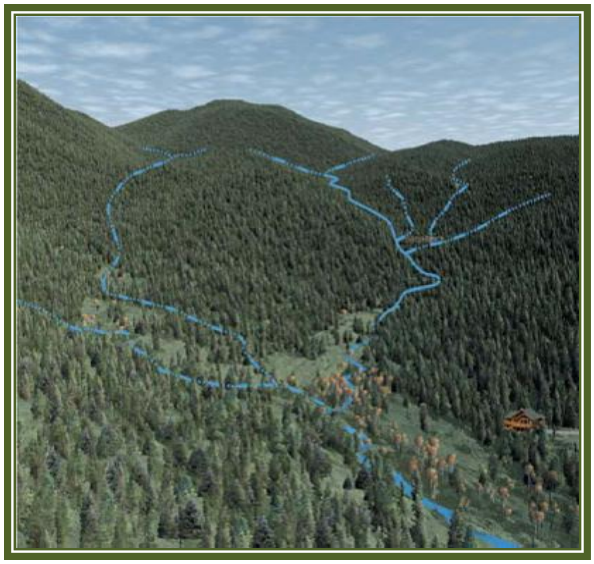
MONTANA

Forestry Best Management Practice (BMP) 2012 Monitoring Report

Executive Summary

Montana's water quality protection program for forest management/timber harvest involves a combination of regulatory and non-regulatory approaches. Since the 1970's, non-regulatory Forestry Best Management Practices (BMPs) have provided guidance on minimum water quality protection standards for harvest and other types of operations. At the same time, concern over impacts of forest management on Montana's watersheds prompted the 1987 Montana Legislature to pass House Joint Resolution 49. This resolution directed the Montana Environmental Quality Council (EQC) to study "how current forest management practices are affecting watersheds in Montana." The EQC established a BMP technical committee that developed Montana's first statewide forestry BMPs in 1987. In 1989 an interdisciplinary working group released the revised Forestry Best Management Practices we still use today.

That same year, the Montana Legislature enacted the BMP Notification Law (76-13-131 MCA), which requires private landowners to notify the Montana Department of Natural Resources and Conservation (DNRC) prior to harvesting timber. DNRC foresters provide information and technical assistance on proper harvest techniques and BMP implementation. Forest practices/ harvesting are administered by the DNRC within a non-regulatory framework; proper use of BMPs supports this mission. Since October 1991 the Streamside Management Zone (SMZ) Law has



Montana's Best Management Practices (BMPs) aim to protect watersheds and water quality.

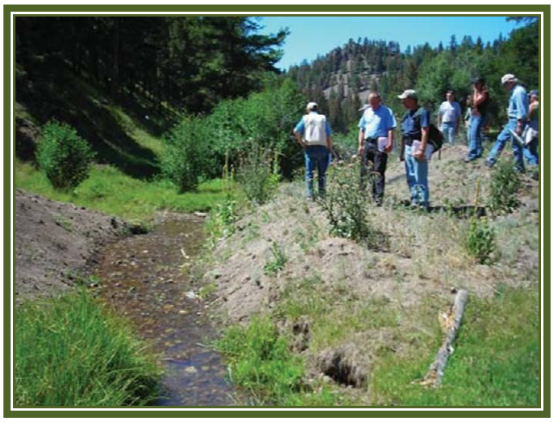
regulated forest practices along streams. This law directs suitable streamside management practices while providing for exceptions to the law if properly applied and approved by DNRC. The law also prohibits certain forest practices along streams. The SMZ Rules became effective March 15, 1993, updated in 2006, and are intended to help define and clarify the SMZ law and enforcement policies.

The BMP field review process has been developed and is used to evaluate whether BMPs are effectively limiting non-point source pollution resulting from harvest operations in Montana. DNRC evaluates forest practices for BMP implementation every two years and reports the findings to the EQC. This report summarizes the findings

of the Montana DNRC 2012 Forestry BMP field review cycle.

FIELD REVIEW PROCESS

In 2012, three interdisciplinary teams were formed to conduct the reviews, covering the northwestern region, the western region, and the central/eastern region of the state. Each team was comprised of a fisheries biologist, a forester, a hydrologist, a representative of a conservation group, a road engineer, a soil scientist, and a non-industrial private forest (NIPF) landowner or logging professional. Additional observers were welcome. The landowner and the logger being reviewed were both encouraged to attend. DNRC used established site selection criteria to select forty-two (42) new timber harvest sites harvested since 2010. The teams evaluated a maximum of forty-nine (49) BMPs at each site, rating the application and effectiveness for each BMP on a five-point scale.



BMP Field Review Team members evaluate a site.

APPLICATION & EFFECTIVENESS

All 42 review sites were evaluated for **BMP application.** Results showed that across all ownerships, BMPs were properly applied 98% of the time. Although many harvest sites had at least one instance where a BMP was inadequately applied, a majority of the departures were minor and did not cause erosion or deliver material to a stream. Of all sites, 12% had one or more major BMP departures in application. In the 2010 reviews, 11% had major BMP departures in application.

The application of eight high risk BMPs were evaluated separately because these are among the most important for protecting soil and water resources. In 2012, these high risk BMPs were properly applied 93% of the time.

The field review teams also evaluated the same 42 sites for **BMP effectiveness**. Results showed that across all ownerships, BMPs were effective in protecting soil and water resources 99% of the time. Of the 42 sites, 48% had one or more minor departures in BMP effectiveness. This compares with 20% in 2010. Minor departures in effectiveness produce minor impacts to soil and water resources; for example: eroded material reaches a draw, but not a stream. Major departures for BMP effectiveness were found on 12% of the sites, identical to 2010. High risk BMPs were effective in providing adequate protection to soil and water resources 96% of the time.

As with previous cycles, the greatest frequency of departures from BMPs, and the most impacts, were associated with road maintenance and road surface drainage.

The field review teams also evaluated application and effectiveness of the Montana Streamside Management (SMZ) Law. Teams found 11 departures out of 334 ratings for application with 73% rated minor and 3 out of 334 ratings for effectiveness with 34% being rated minor.

Table 1: Summary of the 2012 BMP/SMZ Application and Effectiveness by Ownership Group.

Practice	DNRC	Federal	Industry	NIPF	Totals
BMP Application	99%	97%	98%	96%	98%
BMP Effectiveness	99%	98%	99%	99%	99%
SMZ Application	100%	97%	99%	93%	97%
SMZ Effectiveness	100%	99%	99%	99%	99%

FIELD REVIEW OBJECTIVES

The BMP field reviews have been conducted every two years beginning in 1990; 2012 represents the twelfth cycle. In 2012, the objectives of the BMP field reviews were to:

1. Determine if BMPs are being applied on timber harvest operations.
2. Evaluate the general effectiveness of BMPs in protecting soil and water resources.
3. Provide information on the implementation of the SMZ law and rules and assess general effectiveness in terms of protecting water quality.
4. Provide information to focus future educational or study efforts by identifying subjects and geographic areas in need of further attention or investigation.
5. Provide information on the need to revise, clarify, or strengthen BMPs.

Across all ownerships, BMPs were effective in protecting soil and water resources 98% of the time, according to the 2012 findings.

SAMPLE SIZE & DISTRIBUTION

The targeted 42 field review sites are distributed across the state by geographical region and land ownership group. The review process recognizes four ownership groups: State of Montana Trust Lands (DNRC), U.S. Forest Service/Bureau of Land Management lands (Federal), private industrial lands (Industry) and non-industrial private forest lands (NIPF). The basis for site distribution is the proportion of the total statewide harvest volume that is harvested within each region by each ownership group for the latest year complete records are available.

A total of 42 sites were reviewed during the 2012 BMP cycle. 12 (29%) were industry sites, 6 (14%) were DNRC sites, 13 (31% were federal sites, and 11 (26%) were NIPF sites.

SITE INSPECTIONS

The teams conducted the 2012 field reviews from late June through late August. During the on-site field review, team members and landowner representatives meet at a central location prior to each review. Teams and observers then travel to the site. When in the general area of the site, but before actually entering the road system to access the harvest area or the harvest area itself, the group stops to discuss the specifics of the review. The team leader provides maps and field review forms. There may be a landowner briefing to the team giving background information such as silvicultural prescription, season of operation, and associated practices. The final decisions as to which roads and harvest units will be reviewed are then made by the team. All decisions regarding what to review -- which roads, SMZs, new culvert installations and harvest units -- are determined before the team enters the area. Once on site, team members walk the site as a group and review BMP practices conducted in the predetermined areas. Teams typically spend about two hours inspecting each site. Before leaving the site, the team gathers to determine the official BMP ratings.

RESULTS

Presented below are the results of the 2012 BMP Field Reviews as rated for ***Application*** and for ***Effectiveness.*** Streamside Management Zones (SMZ) were also rated in terms of application and effectiveness.

Application of BMPs: The application rating measures whether the BMP was applied, whether it was applied to the correct standards, the appropriate number of times and in the proper locations. Field review teams rated a total of 1,309 practices to assess how landowners and operators applied BMPs. They found 32 departures, 28 of which were given a rating of "3" (minor or temporary), and 4 were rated a "2" (major temporary or minor prolonged) and 0 ratings of 1 (major prolonged). Table 2 illustrates the application of BMPs for all rated practices.

Table 2: Application of BMPs to All Rated Practices by Ownership Group and Rating Category.

Ownership Group	# Practices Rated	Percentage (%) of Practices Rated As			
		Meet or Exceed	***Minor Departures***	***Major Departures***	***Gross Neglect***
DNRC	224	98.7%	1.3%	0%	0%
Federal	459	97.2%	2.6%	0.2%	0%
Industry	353	98.3%	1.5%	0.2%	0%
NIPF	273	96.4%	2.9%	0.7%	0%
All Sites	1,309	97.6%	2.1%	0.3%	0%

Effectiveness of BMPs: The effectiveness rating evaluates how well the applied BMP protected soil and water resources. In terms of impacts: of the 1,309 practices evaluated, there were 16 departures with impacts. These departures break down as 6 ratings of 3 (minor temporary impacts) and 10 ratings of 2 (major temporary or minor prolonged impacts), and 0 ratings of 1 (major prolonged) as illustrated in Table 3.

Table 3: Effectiveness of BMPs for All Rated Practices by Ownership Group and Rating Category

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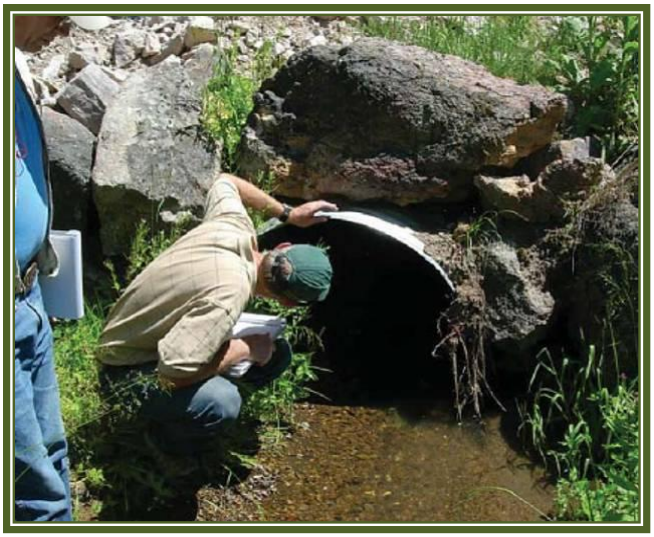
NIPF	273	98.9%	0%	1.1%	0%
All Sites	1,309	98.8%	0.4%	0.8%	<1%



A review team member inspects a culvert.

Streamside Management Zones: The SMZ rating form used in 2012 rated the same 11 BMPs used in previous review cycles. The SMZ law and rules were applicable to 36 sites. SMZ rules were applied correctly 97% of the time. Teams found 11 departures out of 334 ratings for application with 73% rated minor and 3 out of 334 ratings for effectiveness with 34% being rated minor.

Table 4 illustrates SMZ departures by ownership group.

Table 4: SMZ Departures by Ownership Group

Ownership Group	Number of Sites Evaluated			Number of Sites with Departures			Total Number of Departures		
(year →)	'12	'10	'08	'12	'10	'08	'12	'10	'08
DNRC	6	6	6	0	0	0	0	0	0
Federal	10	14	7	2	3	1	3	7	1
Industry	12	12	17	2	1	3	2	2	10
NIPF	9	5	11	3	1	5	6	1	13
All Sites	37	37	41	7	5	9	11	10	24

SMZ effectiveness was rated very high at 99% for all ownerships combined. Of the 334 SMZ evaluations, 331 provided adequate protection, however 2 of the 3 departures were rated as "significant" with a "2" (Major Temporary or Minor Prolonged impacts).

SMZ impacts: Departures covered SMZ width, equipment operation, broadcast burning, reduction of leave trees below the minimum requirements, and sidecasting of material into streams.

Fish Passage: Fish passage for new culvert installations on fish streams was formally rated this year and the results included in the analysis. Only three sites qualified and all were rated adequate or above.

CONCLUSIONS

Application Across All Ownerships: Of all practices rated, 98% were properly applied according to BMP standards. This percentage maintains the 2010 overall rating showing that the BMPs are maintaining a *very high* level of compliance. This high rating demonstrates the strong commitment all ownership groups have to proper forest management and to the protection of Montana's water and forest resources.

Effectiveness Across All Ownerships: For all applied BMPs, 98% were shown to be effective in preventing sediments from reaching draws or streams. This is on par with the overall effectiveness from 2010. Again, a very high standard is being maintained. The most frequent departures and impacts were associated with road maintenance and road surface drainage.

Combining application and effectiveness, the 2012 field reviews rated a total of 2,618 practices across all 42 reviewed sites. There are a combined total of 48 ratings with either a departure or an impact. **A departure and/or impact occurred on approximately 1.6% of all practices rated.**

COMPARISON TO BMP FIELD REVIEW RESULTS 1990 – 2012

Table 5 (back) shows conclusively that voluntary BMP implementation is working in Montana. A steady increase in proper application and effectiveness is evident from 1990 through 2000. Since 2000, the BMP reviews have shown a very high and sustained compliance rate. This success is a tribute to the efforts of all landowners and loggers working in Montana's forests.

Continuing improvements in harvesting equipment have facilitated industry ability to meet or exceed the guidelines of Montana's Best Management Practices.

TABLE 5: COMPARISON OF BMP FIELD REVIEW RESULTS 1990 – 2012

Category	2012	2010	2008	2006	2004	2002	2000	1998	1996	1994	1992	1990
Application of practices that meet or exceed BMP requirements.	98%	97%	97%	96%	97%	96%	96%	94%	92%	91%	87%	78%
Application of high risk practices that meet or exceed BMP requirements.	93%	93%	90%	89%	89%	90%	92%	84%	81%	79%	72%	53%
Number of sites with at least one major departure in BMP application.	3 of 42 (7%)	5 of 45 (11%)	8 of 42 (19%)	4 of 44 (9%)	5 of 39 (13%)	10 of 43 (23%)	4 of 42 (10%)	8 of 47 (17%)	12 of 44 (27%)	17 of 46 (37%)	20 of 46 (43%)	27 of 44 (61%)
Average number of departures in BMP application, per site.	0.76	0.87	1.19	1.52	1.30	1.80	1.40	2.00	3.00	3.90	5.60	9.00
Percentage of practices providing adequate protection.	99%	98%	97%	97%	99%	97%	98%	96%	94%	93%	90%	80%
Percentage of high risk practices providing adequate protection.	96%	96%	91%	92%	95%	92%	93%	89%	86%	83%	77%	58%
Number of sites having at least one major / temporary or minor / prolonged impact.	5 of 42 (12%)	7 of 45 (16%)	8 of 42 (19%)	7 of 44 (16%)	10 of 39 (25%)	15 of 43 (35%)	9 of 42 (21%)	12 of 47 (26%)	15 of 44 (34%)	13 of 46 (28%)	17 of 46 (37%)	28 of 44 (64%)
Average number of impacts per site.	0.38	0.47	1.02	1.05	0.56	1.30	1.00	1.50	2.30	3.00	4.60	8.00

The entire 2010 BMP Audit Report can be viewed online on the Montana DNRC Forest Practices website:
http://dnrc.mt.gov/forestry/assistance/practices/fpractices.asp